

Validation of the Progesterone kit for the determination of progesterone in serum at field level using samples from a study evaluating the efficacy of altrenogest treatment for oestrus synchronization in gilts



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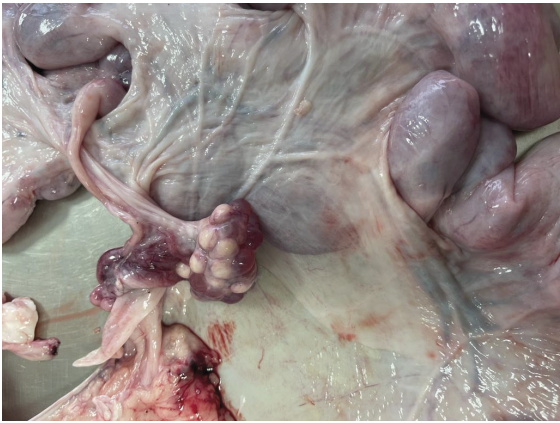
Background and Objectives

Presence or absence of progesterone (P4) in gilts is useful to check cycle status specially with a specific hormonal treatment, such as induction or synchronization. Until now, it took a few days between blood collection, sending it to the corresponding laboratory, preparing the assay dilution and receiving the results in the field (PNT-HOR-30409; ELFA reference technique). The objective of this study was to determine the validity of a rapid serum P4 detection kit to evaluate the efficacy of a treatment with altrenogest for synchronization of oestrus in gilts, directly on the farm.

Material and Methods

A blood sample was obtained (n=30 gilts) before starting an 18-day treatment with altrenogest (Regumate®). Sera from each sample was separated and divided into two aliquots. One aliquot was sent to a laboratory for P4 determination with an analytical method PNT-HOR-30409 (ELFA reference technique; ng/mL) and the other aliquot was tested by the MSD progesterone kit. After treatment, a blood sample was collected again, and P4 testing repeated as described above (n=40 gilts). For the rapid serum P4 detection kit, 5 drops of serum were added to a well and the result read 15 minutes later. Interpretation of this field kit is based on P4 concentration: >10ng/mL and <10ng/mL will test as positive and negative, respectively. The statistical correlation between the two methods was tested by a two-by-two comparison, using Phi (values -1 to +1).

Figure 1. Gilt at puberty (blood included in this study, + in the progesterone kit)



Results

There was a highly significant association between the results of progesterone of both tests:

- Pre-treatment (n=30): lab results (17- & 13+) vs kit (16- & 14+): Phi=0.818 (p<0.001) (Fig.2).
- Post-treatment (n=40): lab results (38+ & 2-) vs kit (38+ & 2-): Phi=1.000 (p=0.001) (Fig.3).



Figure 2. Pre-treatment progesterone kit results



Figure 3. Post-treatment progesterone kit results

Discussion and conclusion

This quick test has proved to have a high correlation with the results of the quantitative gold standard assay, allowing producers to obtain, at farm level and in just a few minutes, a qualitative assessment of serum progesterone levels. In this case, it was used to assess the presence or absence of progesterone, before and after treatment, to determine if the treatment had been correct and effective or not. For treatment with altrenogest for oestrus synchronization, the gilts must be positive for P4 before starting treatment (puberty), and must be negative after treatment, which indicates completion of the luteal phase.

¹ Mur P. Uso de altrenogest en nulíparas. Repropig No8. 2020
² Eliasson L. Relationships between puberty and production traits in the gilt. Oestrous symptoms at puberty. Anim Reprod Sci. 1991;25:255-64.
³ Vela A. et al. Determination of puberty in gilts: contrast of diagnostic methods. Porcine Health Manag. 2022;8